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Mr. W. Dale Harvey
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**TENTATIVE WASTE DISCHARGE REQUIREMENTS ORDER FOR NICHOLS
PISTACHIO, PISTACHIO PROCESSING PLANT, KINGS COUNTY**

This letter transmits my comments on the subject Tentative Order, which was prepared by Central Valley Water Board staff in the Fresno Office. I am a resident of Fresno County and a California registered civil engineer with expertise in evaluating the effects to soil and groundwater from discharges of food processing and winery wastewater to land for treatment and disposal.

Finding 6 indicates that the discharger operates the Plant 24 hours per day, seven days per week during the pistachio harvest. Finding 2 indicates that the pistachio processing season lasts from six to eight weeks, or 42 to 56 days. Finding 8 cites the processing season as lasting 40 days, and uses this value along with the discharger's proposed 2.4 million gallon per day average discharge flow rate to calculate the annual total discharge flow to the 675-acre Reuse Area as 96 million gallons. Finding 15 uses this value, along with discharge nitrogen data, to calculate the discharge's annual total nitrogen loading to the 675-acre Reuse Area. The Tentative Order does not prescribe a limitation for total annual discharge flow or for the time period during which discharge flow is authorized, so it is possible that the discharger may exceed the Tentative Order's projected annual 96 million gallon discharge flow by five to 40 percent and thereby significantly increase the loading of waste constituents to the Reuse Area beyond that characterized by Tentative Order.

Recommendation 1: Revise Finding 8 to cite the same pistachio processing season duration as that cited in Finding 2 (i.e., six to eight weeks), and revise Finding 15 to use the longest cited duration (i.e., 56 days) for characterizing the discharge's heaviest nitrogen loading to the Reuse Area, and use that value to compare to annual nitrogen demands for the crops grown in the Reuse Area (i.e., almonds, pistachios, and unspecified field crops) to demonstrate the discharge's annual nitrogen loading does not exceed reasonable agronomic demand.

Recommendation 2: Revise the Tentative Order to include a discharge specification for total annual discharge flow and for the time period during which discharge flow is authorized.

Finding 9 presents a table of data characterizing the discharge for several major waste constituents and parameters, and indicates that the waste characterization is based on monitoring data collected from 2006 through 2011. Page 1 of the Information Sheet also presents waste characterization data, again based on data collected from 2006 through 2011, but the values provided for minimum, maximum, and average are different for each constituent or parameter. Take pH for example, Finding 9 characterizes the discharge pH as ranging from 5.0 to 7.5 and averaging 6.1, while the Information Sheet characterizes discharge pH as ranging from 3.2 to 12.5 and averaging 6.0. The Tentative Order does

not indicate whether the average pH values were determined by transforming the reported pH values logarithmically into hydrogen ion concentrations, averaged, and then transformed back into pH. Food processing wastewater discharges characterized by low pH may leach metals such as chromium, lead, molybdenum, and zinc from metallic waste collection, conveyance, and containment facilities. Consequently, the discharge may contain metals in concentrations exceeding those in the Plant's source water and possibly applicable water quality objectives. Furthermore, the discharge of waste with a pH of 12.5 requires compliance with hazardous waste disposal laws and regulations.

Recommendation 3: Explain the pH value of 12.5 for the maximum discharge pH cited in the Information Sheet and justify why, if the discharge exhibits such high pH values, it does not meet the criteria of hazardous waste.

Recommendation 4: Revise Finding 9 (or the Information Sheet) to correct the data used to characterize the discharge. If the data in Finding 9 are corrected to match that in the Information Sheet, then also correct the values in various findings that characterize projected waste constituent loading data (i.e., Findings 15 and 42.b for total nitrogen loading, Findings 17 and 42.a for BOD loading, Finding 40 for TDS loading, and Finding 42.a for EC).

Recommendation 5: If there are available data, revise Finding 9 (and the Information Sheet) to characterize the discharge for metals (i.e., aluminum, chromium, copper, lead, molybdenum, nickel, and zinc). If the discharge has not yet been characterized for metals, revise the Tentative Order's Monitoring and Reporting Program to require discharge monitoring for metals at least three times in non-consecutive weeks during the first processing season following order adoption.

Recommendation 6: Include a footnote in tables characterizing discharge quality that documents the method used to calculate average discharge pH.

Finding 17 characterizes the discharge's average BOD loading to the Reuse Area as about 50 lbs/acre/day, and states the discharger's implementation of best management practices, including waiting seven to 14 days before reapplying wastewater to the same discrete irrigation area and tilling the soil following applications, as sufficient to preclude nuisance odors or reducing conditions in soils that could unreasonably degrade groundwater quality. The Tentative Order prescribes a cycle average BOD loading limit of 100 lbs/acre/day, but does not prescribe a minimum resting period between applications.

Finding 17 does not characterize the BOD loading on the day of application. This is important information for the public to evaluate the discharge's potential to create objectionable odors that may adversely impact Plant employees and impair the use of private property by the discharger's neighbors. BOD loadings for wastewater delivered via 6-inch-deep furrow irrigation will be very high on the day of application. For example, the instantaneous BOD loading using the average BOD concentration cited in Finding 9 (1,712 mg/L) exceeds 2,200 lbs/acre. The instantaneous BOD loading increases to over 10,000 lbs/acre using the maximum BOD concentration cited in the Information Sheet

(8,200 mg/L).¹ To achieve a cycle average BOD loading of 100 lbs/acre/day, areas receiving wastewater via flood irrigation may be restricted to one to two wastewater applications per processing season, a rest period that far exceeds the seven to 14 day resting period identified in Finding 17 as a best management practice.

Recommendation 7: Revise Finding 17 to characterize the discharge's instantaneous BOD loading for the various irrigation methods used in the Reuse Area (i.e., sprinkler, flood, and drip). Include a summary of an analysis that demonstrates that the Reuse Area is sufficient to dispose of the projected wastewater flow while meeting the cycle average BOD load limit. The summary should also address any cultivation practices (e.g., nut harvest) that may limit the use of certain areas during the processing season for wastewater disposal.

Recommendation 8: Include a discharge specification that states, "The discharge of process wastewater and solids/sludge shall be distributed uniformly on adequate acreage in compliance with the Discharge Specifications."

Discharge Specification B.4 states, "Wastewater treatment, storage, and disposal shall not cause pollution or a nuisance as defined by Water Code section 13050." Standard Provision A.11 states, "Neither the treatment nor the discharge shall create a condition of nuisance or pollution as defined by the California Water Code, Section 13050." Land use in the discharge area includes rural residential. There are a few residences close to the Plant and Reuse Area. To ensure the discharger's waste storage and disposal methods do not adversely impact these households, the Tentative Order should require the discharger to conduct the discharge in a manner that does not result in the detection of objectionable odors beyond the boundaries of the discharger's property. This will protect the discharger's neighbors from enduring objectionable conditions created by the discharge without having to justify that the discharge has impacted "an entire community or neighborhood, or any considerable number of persons" (see California Water Code Section 13050(m)(2)).

Recommendation 9: Include a discharge specification that requires the discharge to be managed in a manner that precludes the development of objectionable odors or vectors perceivable beyond the discharger's property. An example of such a specification is as follows: "Objectionable odors originating at this facility shall not be perceivable beyond the limits of the property owned by the Discharger."

Recommendation 10: Include a Reuse Area specification that establishes setback requirements of at least 50 feet for the edge of land application area to any properties with an occupied residence.

¹ Wastewater applied per acre using flood irrigation:

(6" depth)(1' / 12")(43,560 sf/acre)(7.48 gallons/cubic feet)(1 MG / 1,000,000 gallons) = 0.16 MG/acre

Number of acres to dispose of 2.4 mgd via flood irrigation:

(2.4 mgd)/(0.16 MG/acre) = 15 acres

Instantaneous BOD loading using average BOD concentration of 1,712 mg/L

(0.16 MG/acre)(1,712 mg/L)(8.34 conversion factor) = 2,300 lbs/acre

Instantaneous BOD loading using maximum BOD concentration of 8,200 mg/L (cited in Information Sheet):

(0.16 MG/acre)(8,200 mg/L)(8.34 conversion factor) = 10,900 lbs/acre

Recommendation 11: Include a Solids Specification regarding the land application of screenings and pond sludge, for example: “Solids/sludge applied to the Reuse Area shall be evenly spread at a thickness that will not cause nuisance conditions.”

Finding 11 indicates that wastewater is applied to crops via flood, sprinkler, or drip irrigation depending on crop type. Wastewater temporarily stored in the discharger’s sprinkler or drip irrigation delivery system may become anoxic and generate offensive odors when discharged.

Recommendation 12: Include a requirement for flushing with fresh water all pressurized pipelines conveying wastewater to the Reuse Area upon completion of waste application to preclude the generation of objectionable odors perceivable beyond the discharger’s property. An example of such a specification is as follows: “Irrigation pipelines shall be flushed with fresh water after wastewater application as often as needed to ensure continuous compliance with [the Discharge Specification regarding objectionable odors perceivable beyond the discharger’s property].”

Finding 7 indicates wastewater is impounded in four ponds equipped with a 36-mil scrim-reinforced polypropylene synthetic liner. The discharge is seasonal, meaning the ponds will be empty and the liners subject to solar degradation for most of the year. The Tentative Order’s Monitoring and Reporting Program does not, but should, require periodic monitoring of pond liners for containment integrity.

Recommendation 13: Revise the Tentative Order’s Monitoring and Reporting Program to require leak detection monitoring of all pond liners (e.g., via geoelectrical leak detection methods) at least once every five years beginning in the first year following order adoption.

Finding 19 presents data on discharge salinity constituents and parameters collected in 1996 (three sampling events) and 2012 (one sampling event). Discharge TDS ranges from 800 to 2,464 mg/L (average 1,810 mg/L) and FDS ranges from 516 to 1,496 mg/L (average 1,000 mg/L). Finding 20 states, “Based on the results the difference between the TDS and FDS in the samples shows a 30% to 40% increase due to concentrations of organic dissolved solids in the discharge.” This statement appears to indicate that the discharge TDS concentration is about 30% to 40% greater than discharge FDS concentration due to the presence of organic dissolved solids in the discharge. It would be helpful if staff included a sample calculation (perhaps in the Information Sheet) regarding this analysis.

Recommendation 14: Revise Finding 20 to identify the method and references used by staff to analyze data presented in Finding 19 to support the conclusion in Finding 20 regarding the increase in TDS due to organic dissolved solids.

The Tentative Order contains several findings relating to an antidegradation analysis of the proposed discharge, but it does not identify the individual(s) responsible for conducting the analysis. The Tulare Lake Basin Plan, Page IV-21, establishes that it is the discharger’s responsibility to include information in its report of waste discharge “regarding the nature and extent of the discharge and the potential for the discharge to affect surface or ground water quality in the region.” Finding 4 indicates the discharger submitted a report of waste discharge for an increase in discharge flow almost 20 years

ago in 1994. If the discharger's 1994 report of waste discharge and subsequent submittals did not include the results of an antidegradation analysis, then staff should have determined the application incomplete until the discharger submitted the analysis. In any event, Regional Board members (and the public) should be informed when the discharger has failed to submit an antidegradation analysis, thereby requiring staff to use State resources to conduct the analysis.

Recommendation 15: Revise Finding 4 to indicate whether the discharger's report of waste discharge included an antidegradation analysis, and revise Finding 42 to identify the entity responsible for conducting the antidegradation analysis. Please include in the Staff Response to Comments a discussion explaining staff's procedures for processing reports of waste discharge that lack an antidegradation analysis.

The Tentative Order does not characterize the discharger's storm water collection, conveyance, and disposal systems for its Plant and Reuse Area. Finding 26 indicates the Plant and Reuse Area are within Flood Zone A, an area subject to potential flooding by a 100-year flood, and states the discharger has constructed "flood control features" and "berms" to prevent inundation or runoff from the Reuse Area. Discharge Prohibition A.1 prohibits the discharge of waste (including storm water containing waste) to surface waters or surface water drainages. Most WDR Program waste discharge requirements orders require the discharger to design, construct, operate, and maintain all waste conveyance, treatment, storage, and disposal units to prevent inundation or washout due to floods with a 100-year return frequency. Without such a discharge specification, the discharger is in threatened violation of Discharge Prohibition A.1.

Recommendation 16: Include a discharge specification that states, "All waste conveyance, treatment, storage, and disposal units shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency."

Recommendation 17: Include a finding that describes the discharger's storm water collection, storage, and disposal for the Plant and for the Reuse Area.

Finding 48, item b, states that the Tentative Order "prohibits discharge in the event soils become saturated." The Tentative Order does not include such a discharge prohibition.

Recommendation 18: Include the following Reuse Specification: "The Discharger may not discharge to the Reuse Area within 24 hours of a predicted storm event, during periods of precipitation, and for at least 24 hours after cessation of precipitation, or when soils are saturated."

Discharge Specification B.2 states, "The median pH of the discharge shall not be less than 4.5 or greater than 9.0 over the course of the processing season." The Tentative Order's Monitoring and Reporting Program requires daily monitoring of discharge pH. If the waste characterization data presented in Finding 9 is correct (as opposed to the characterization provided in the Information Sheet), then discharge pH ranges from 5.0 to 7.5. The Tentative Order provides no technical justification for allowing the discharger such a wide pH limit. Also, there is no technical justification for why staff selected a median pH discharge limit instead of an instantaneous pH discharge limit.

Recommendation 19: Include technical justification supporting the proposed discharge specification for pH, and include technical information regarding Reuse Area soils showing that the soils have sufficient buffering capacity to receive the waste without reliance on frequent soil amendment applications to adjust for soil pH.

The Tentative Order's Groundwater Limitations are limited to a Nitrate-Nitrogen limitation of 10 mg/L and Title 22 MCLs ("For constituents identified in Title 22, the MCLs quantified therein"). While this may be acceptable for constituents with primary MCLs, it is not appropriate for constituents or parameters with secondary MCLs since Title 22 provides three sets of secondary MCLs (Recommended, Upper, Short Term) for EC, TDS, chloride, and sulfate. For compliance and enforcement reasons, the Groundwater Limitations should specify which set of secondary MCLs applies to the discharge. Since the EC of the Plant's source water is only 240 umhos/cm (from Finding 22), the Groundwater Limitations should specify the Recommended Secondary MCLs (i.e., 500 mg/L TDS, 900 umhos/cm EC, 250 mg/L chloride, and 250 mg/L sulfate). Maximum groundwater limitations of 900 umhos/cm for EC and 250 mg/L for chloride may be excessive, given the crops grown in the discharge area. Staff should have evaluated and proposed groundwater limitations for salinity constituents that are also protective of area groundwater's beneficial use for agricultural supply.


Recommendation 20: Revise the Tentative Order's Groundwater Limitations to identify which set of secondary MCLs applies in this discharge situation. Include more stringent groundwater limitations for salinity constituents (e.g., EC, chloride), as appropriate, to protect area groundwater beneficial uses for agricultural supply.

The Tentative Order's Monitoring and Reporting Program does not currently require the discharger to monitor groundwater potentially affected by the storage of wastewater in single-lined surface impoundments or discharge of waste to the Reuse Area. Instead, staff is recommending the Regional Board to require the discharger to monitor its discharge and the soils in the Reuse Area. The Monitoring and Reporting Program requires the discharger to establish at least five soil profile monitoring stations and at least one representative background location. This requirement amounts to one soil sample profile monitoring station per 135 acres. Reliance on only one background soil profile monitoring station is not advised for a discharge area as large as the Reuse Area. Standard sampling for agricultural soil evaluation purposes typically recommend one sample be collected per 40 acres, provided the soil within the 40 acres is relatively homogeneous. Also, soil samples submitted for laboratory analyses are usually composited from multiple samples collected in the same sample area from the same depth. Best management practices for this discharge should include soil sampling that is at least as stringent as accepted agricultural soil sampling methods.

Recommendation 21: Revise the Tentative Order's Monitoring and Reporting Program to require the discharger to establish at least one soil profile monitoring station per 40 acres of Reuse Area and at least three representative background soil profile locales, and to collect composite samples for each profile monitoring station in order to provide data that better represent the discharge's affect on soil quality. Because of the inherent difficulty of evaluating soil monitoring data and interpreting the data with respect to potential water quality impacts, the Regional Board should also require the discharger to (1) submit a detailed soil sampling and monitoring plan prepared by a California

registered civil engineer with experience in evaluating the impacts to soil and groundwater from discharges of food processing waste, and (2) to include in each Annual Monitoring Report an evaluation by a California registered civil engineer of discharge, Reuse Area, and soil monitoring data for the past processing season and previous processing seasons (as appropriate) that shows the discharge is being conducted in compliance with the order and does not threaten to unreasonably degrade groundwater quality.

I offer these recommendations in the hope that staff will revise the Tentative Order accordingly, or provide justification why staff believes the recommended changes are not warranted.

A handwritten signature in cursive script that reads "Jo Anne Kipps".

JO ANNE KIPPS
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